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10/722,031	11/25/2003	Philip Orlik	MH-5133	6510

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EXAMINER	
KANG, SUK JIN	

ART UNIT	PAPER NUMBER
2619	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/722,031	ORLIK ET AL.	
	Examiner	Art Unit	
	Suk Jin Kang	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2007*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 January 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claims 2, 3, 10, 11, and 12** are objected to because of the following informalities:

a) On line 2 of claim 2, delete "and"; on line 3 of claim 2, insert --and-- before "including";

b) On line 2 of claim 3, delete "and"; on line 3 of claim 3, insert --;-- after "discovery";

c) On line 2 of claim 10, replace "including" with --includes--;

d) On line 19 of claim 11, delete "and";

e) On line 8 of claim 12, insert --to-- after "according";

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 12** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Consider claim 12, the text in line 14, "and each packet in the network using the DSR", is ambiguous because it is not clear as to what is being claimed. Appropriate clarification is requested.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1-8 and 10-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Stanforth et al.** (U.S. Patent # 7,151,769 B2) in view of **Broch et al.** (Non-Patent Publication <draft-ietf-manet-dsr-00.txt>).

Consider **claim 1**, Stanforth et al. discloses a method for maximizing residual power along routes in a wireless network including a plurality of battery operated nodes (10, figure 3, figure 8), comprising: discovering a plurality of routes from a destination node to a source node via intermediate nodes of the network (column 6 lines 4-15 and 51-64); measuring a residual power in the battery of each intermediate node (column 6 lines 51-67, column 7 lines 1-7); determining a power cost associated with each route according to the residual power of the intermediate nodes (column 12 lines 65-67, column 13 lines 1-3 and 29-41); selecting a particular route for transferring data from the source node to the destination node, the particular route having a least power cost (column 6 lines 51-67, column 7 lines 1-7 and 41-48); including the particular route in a routing table in a packet, in which the routing table is an ordered list of intermediate node addresses (column 6 lines 51-67, column 7 lines 1-7, column 10 lines 36-41); and transmitting each packet in the network, and in which each packet includes the routing table (figure 3, column 6 lines 57-65, column 8 lines 14-18), but may not expressly disclose using dynamic source routing (DSR).

However, in the same field of endeavor, Broch et al. discloses using dynamic source routing (DSR) to discover routes (route discovery, page 4 section 4.1 lines 13-21) and to transmit packets in the network (page 5 section 4.2 lines 1-10).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate using dynamic source routing as taught by Broch et al. with the method as disclosed by Stanforth et al. for the purpose of efficiently routing packets through an ad-hoc network.

Consider **claim 2**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses the method further comprising: determining a delay cost associated with each route (latency, column 6 lines 45-50, column 10 lines 23-26); selecting a particular route having a least delay cost (latency, column 10 lines 36-52); and including the least delay cost in each transmitted packet (column 10 lines 46-52).

Consider **claim 3**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses the claimed invention, but may not expressly disclose associating a time of discovery with each route; selecting the particular route having a most recent time of discovery; and including a time stamp indicating the time that the particular route was discovered in the routing table in each transmitted packet.

Nonetheless, Broch et al. further associating a time of discovery with each route (page 7 lines 1-3); selecting the particular route having a most recent time of discovery (page 7 lines 1-3, page 18 section 6.1 lines 9-13); and including a time stamp indicating the time that the particular route was discovered in the routing table in each transmitted packet (page 7 lines 1-3, page 18 section 6.1 lines 9-13).

Consider **claim 4**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses the method in which the network is ad-hoc (column 6 lines 4-10).

Consider **claim 5**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses storing a routing table in each node (column 6 lines 51-65).

Consider **claim 6**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses quantizing the residual power to a power level to determine the power cost (column 12 lines 65-67, column 13 lines 1-19 and 29-41).

Consider **claim 7**, and as applied to claim 6, Stanforth et al., as modified by Broch et al., discloses participating in the route if the power level is a least power level; not participating in the route if the power level is a highest level; and participating in the route if the power level is an intermediate power level, and increasing the power cost according to the power level (column 7 lines 7-31, column 9 lines 5-18, column 10 lines 53-67).

Consider **claim 8**, and as applied to claim 6, Stanforth et al., as modified by Broch et al., discloses the method in which an initial power of an n^{th} node is E joules, and the residual power in the n^{th} node at time t is R(t) joules, and the power cost for using n^{th} node as an intermediate node is P(n), and the power level L(t) of the n^{th} is determined by if $R(t) \leq E * \alpha$, then $L(t) = 3$; else if $E * \alpha < R(t) \leq E * \beta$, then $L(t) = 2$; else if $E * \beta < R(t) \leq E * \gamma$, then $L(t) = 1$; else $L(t) = 0$, where α, β, and γ are numbers less than 1.0 and monotonically increasing according to $\alpha < \beta < \gamma$ (column 8 lines 40-58, column 9 lines 16-55).

Consider **claim 10**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses including the routing table in each transmitted packet (figure 3,

column 6 lines 57-65, column 8 lines 14-18), but may not expressly disclose the method in which the discovering uses ad-hoc on-demand distance vector routing.

Nonetheless, Broch et al. further discloses the method in which the discovering uses ad-hoc on-demand distance vector routing (page 18 section 6.1 lines 1-13).

Consider **claim 11**, Stanforth et al. discloses a method for maximizing residual power along routes in a wireless network including a plurality of nodes (10, figure 3, figure 8), each node having an address and a battery, comprising: measuring a residual power in the battery of the intermediate node (column 6 lines 51-67, column 7 lines 1-7); determining a power cost associated with each route according to the residual power of the intermediate nodes (column 12 lines 65-67, column 13 lines 1-3 and 29-41); repeating the broadcasting, receiving, measuring, determining and the sending until the request packet reaches the destination node (column 12 lines 44-67); constructing a route in a routing table in the source node from the reply packets, the route having the associated power cost (column 6 lines 51-65); selecting a particular route for transferring a data packet from the source node to the destination node, the particular route having a least power cost (column 6 lines 51-67, column 7 lines 1-7 and 41-48); including the particular route in a routing table in a packet, in which the routing table is an ordered list of intermediate node addresses (column 6 lines 51-67, column 7 lines 1-7, column 10 lines 36-41); and transmitting each packet in the network, and in which each packet includes the routing table (figure 3, column 6 lines 57-65, column 8 lines 14-18), but may not expressly disclose broadcasting a request packet, the request packet including the address of a source node and the address of a destination address

using dynamic source routing (DSR); receiving the request packet in an intermediate node; and sending a reply packet to the source node, the reply packet including the address of the intermediate node.

However, in the same field of endeavor, Broch et al. discloses broadcasting a request packet, the request packet including the address of a source node and the address of a destination address using dynamic source routing (DSR) (page 4 section 4.1 lines 13-38); receiving the request packet in an intermediate node (column 5 lines 21-33); and sending a reply packet to the source node (page 4 section 4.1 lines 23-38), the reply packet including the address of the intermediate node (page 19 section 6.1.3, page 20 section 6.1.4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a request and reply packet as taught by Broch et al. with the method as disclosed by Stanforth et al. for the purpose of efficiently routing packets through an ad-hoc network.

Consider **claim 12**, Stanforth et al. discloses a wireless network including a plurality of battery operated nodes (10, figure 3, figure 8), comprising: means for discovering a plurality of routes from a destination node to a source node via intermediate nodes of the network (column 6 lines 4-15 and 51-64); means for measuring a residual power in the battery of each intermediate node (column 6 lines 51-67, column 7 lines 1-7); means for determining a power cost associated with each route according to the residual power of the intermediate nodes (column 12 lines 65-67, column 13 lines 1-3 and 29-41); and means for selecting a particular route for

transferring data from the source node to the destination node, the particular route having a least power cost (column 6 lines 51-67, column 7 lines 1-7 and 41-48), in which the particular route is included in a routing table in a packet, in which the routing table is an ordered list of intermediate node addresses (column 6 lines 51-67, column 7 lines 1-7, column 10 lines 36-41); and each packet in the network, and in which each packet includes the routing table (figure 3, column 6 lines 57-65, column 8 lines 14-18), but may not expressly disclose using dynamic source routing (DSR).

However, in the same field of endeavor, Broch et al. discloses using dynamic source routing (DSR) to discover routes (route discovery, page 4 section 4.1 lines 13-21) and to transmit packets in the network (page 5 section 4.2 lines 1-10).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate using dynamic source routing as taught by Broch et al. with the method as disclosed by Stanforth et al. for the purpose of efficiently routing packets through an ad-hoc network.

Consider **claim 13**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses the method in which the routing table includes a delay cost (latency, column 6 lines 45-50, column 10 lines 23-26 and 36-52) and the power cost of the route (column 6 lines 51-67, column 7 lines 1-7 and 41-48).

Consider **claim 14**, and as applied to claim 1, Stanforth et al., as modified by Broch et al., discloses updating the routing table in each packet when the packet is transmitted (figure 3, column 6 lines 57-65, column 8 lines 14-18).

Response to Arguments

6. Applicant's arguments with respect to claims 1-8 and 10-14 have been considered but are moot in view of the new ground(s) of rejection as necessitated by applicant's amendment. See the above rejections of claims for the relevant interpretation and citations found in Stanforth et al., in view of Broch et al., disclosing the newly added limitations.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

9. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Suk Jin Kang whose telephone number is (571) 270-1771. The examiner can normally be reached on Monday - Friday 8:00-5:00 EST.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Suk Jin Kang
S.J.K./sjk

January 4, 2008

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